Andhra Pradesh State Council of Higher Education

Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

Question Paper Name :	Chemical Engineering 20th June 2023 Shift 1
Duration :	180
Total Marks :	200
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No

Mathematics

Section Id :   418099360

Section Number :   1

Mandatory or Optional :   Mandatory

Number of Questions :   50

Section Marks :   50

Enable Mark as Answered Mark for Review and Clear Response :   Yes

Maximum Instruction Time :   0

Is Section Default? :   null

Question Number : 1 Question Id : 41809918003 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\Delta = \begin{vmatrix} 1 & 1 & 1 \\ 1 & 1+x & 1 \\ 1 & 1 & 1+y \end{vmatrix}$ for x≠0 and y≠0, then Δ is

Options :

1. ✖ Divisible by x but not y

2. ✖ Divisible by y but not x

3. ✔

Divisible by both x & y

Divisible by neither x nor y

4. ✖

Question Number : 2 Question Id : 41809918004 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $x^a y^b = e^m$ and $x^c y^d = e^n$, $\Delta_1 = \begin{vmatrix} m & b \\ n & d \end{vmatrix}$, $\Delta_2 = \begin{vmatrix} a & m \\ c & n \end{vmatrix}$ and $\Delta_3 = \begin{vmatrix} a & b \\ c & d \end{vmatrix}$

Then the values of x and y are

Options :

1. ✖ $\dfrac{\Delta_1}{\Delta_3}$ and $\dfrac{\Delta_2}{\Delta_3}$

2. ✖ $\dfrac{\Delta_2}{\Delta_1}$ and $\dfrac{\Delta_3}{\Delta_1}$

3. ✖ $\log\left(\dfrac{\Delta_1}{\Delta_3}\right)$ and $\log\left(\dfrac{\Delta_2}{\Delta_3}\right)$

4. ✔ $e^{\left(\frac{\Delta_1}{\Delta_3}\right)}$ and $e^{\left(\frac{\Delta_2}{\Delta_3}\right)}$

Question Number : 3 Question Id : 41809918005 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

If $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & a & 1 \end{bmatrix}$ and $A^{-1} = \begin{bmatrix} 1/2 & 1/2 & 1/2 \\ -4 & 3 & c \\ 5/2 & -3/2 & 1/2 \end{bmatrix}$ then the values of

a and c are equal to

Options :

1. ✖   1 and 1

2. ✔   1 and -1

3. ✖   1 and 2

4. ✖ -1 and 1

Question Number : 4 Question Id : 41809918006 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $adj\ B = A$, $|P| = |Q| = 1$ then $adj\left(Q^{-1}BP^{-1}\right)$ is

Options :

1. ✖ PQ

2. ✖ QAP

3. ✔ PAQ

4. ✖ $PA^{-1}Q$

Question Number : 5 Question Id : 41809918007 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of x if the matrix $A = \begin{bmatrix} 0 & 2y & z \\ x & y & -z \\ x & -y & z \end{bmatrix}$ satisfies the equation

$A^T A = I$

Options :

1. ✔ $\pm \dfrac{1}{\sqrt{2}}$

2. ✖ $\pm \dfrac{1}{\sqrt{3}}$

3. ✖ $\pm \dfrac{1}{\sqrt{6}}$

4. ✖ $\pm \dfrac{1}{2\sqrt{2}}$

Question Number : 6 Question Id : 41809918008 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\dfrac{(x+1)}{(x-a)(x-3)} = \dfrac{2}{x-a} + \dfrac{b}{x-3}$ then $(a, b) =$

Options :

1. ✖ $(-4, 1)$

2. ✔ $(7, -1)$

3. ✖ $(4, 1)$

4. ✖ $(-4, -1)$

Question Number : 7 Question Id : 41809918009 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\dfrac{(x+1)^2}{x^3+x} = \dfrac{A}{x} + \dfrac{Bx+C}{x^2+1}$, then $\sin^{-1}\left(\dfrac{A}{C}\right) =$

Options :

1. ✖ $\dfrac{\pi}{2}$

2. ✖ $\dfrac{\pi}{3}$

3. ✖ $\dfrac{\pi}{4}$

4. ✔ $\dfrac{\pi}{6}$

Question Number : 8 Question Id : 41809918010 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $4n\alpha = \pi$, then $\cot\alpha \cot 2\alpha \cot 3\alpha ... \cot(2n-1)\alpha$ *is equal to*

Options :

1. ✔ 1

2. ✖ -1

3. ✖ ∞

4. ✖ π

Question Number : 9 Question Id : 41809918011 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\dfrac{\tan 3A}{\tan A} = k$, *then* $\dfrac{\sin 3A}{\sin A}$ *is equal to*

Options :

1. ✖ $\dfrac{2k}{k-1}, k \in R$

2. ✖ $\dfrac{2k}{k-1}$, $k \in \left[1/3 , 3 \right]$

3. ✔ $\dfrac{2k}{k-1}$, $k \notin \left[1/3 , 3 \right]$

4. ✖ $\dfrac{k-1}{2k}$, $k \notin \left[1/3 , 3 \right]$

Question Number : 10 Question Id : 41809918012 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If two angles of a $\Delta\, ABC$ are 45° and 60° then the ratio of smallest to greatest sides are

Options :

1. ✔ $(\sqrt{3}-1) : 1$

2. ✖ $\sqrt{3} : \sqrt{2}$

3. ✖ $1 : \sqrt{3}$

4. ✖ $\sqrt{3} : 1$

Question Number : 11 Question Id : 41809918013 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

If $\sin^{-1} x + \sin^{-1} y = \dfrac{2\pi}{3}$ then $\cos^{-1} x + \cos^{-1} y =$

Options :

1. ✖ $\dfrac{2\pi}{3}$

2. ✔ $\dfrac{\pi}{3}$

3. ✖ $\dfrac{\pi}{6}$

4. ✖ π

Question Number : 12 Question Id : 41809918014 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\tan\left\{\sin^{-1}\left(\cos\left(\sin^{-1} x\right)\right)\right\} \tan\left\{\cos^{-1}\left(\sin\left(\cos^{-1} x\right)\right)\right\}$, where

$0 < x < \pi/2$, is equal to

Options :

1. ✖ 0

2. ✔ 1

3. ✖ -1

4. ✖ 2

Question Number : 13 Question Id : 41809918015 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $0 \leq x, y \leq 2\pi$ and $\sin x + \sin y = 2$, then $x + y =$

Options :

1. ✔ π

2. ✖ $\dfrac{\pi}{2}$

3. ✖ $\dfrac{\pi}{4}$

4. ✖ 3π

Question Number : 14 Question Id : 41809918016 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\sec \alpha$ and $\csc \alpha$ are the roots of $x^2 - px + q = 0$, then

Options :

1. ✖ $p^2 = q(q-2)$

2. ✔ $p^2 = q(q+2)$

3. ✘ $p^2 + q^2 = 2q$

4. ✘ $p^2 + q^2 = q$

Question Number : 15 Question Id : 41809918017 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\cos\left(\dfrac{1}{2}\cos^{-1}\dfrac{1}{8}\right)$ is

Options :

1. ✔ $\dfrac{3}{4}$

2. ✘ $\dfrac{3}{8}$

3. ✘ $\dfrac{1}{16}$

4. ✘ $\dfrac{1}{4}$

Question Number : 16 Question Id : 41809918018 Display Question Number : Yes Is Question

If in ΔABC, sides a, b, c are in A.P. , then

Options :

1. ✖ $B > 60°$

2. ✔ $B \leq 60°$

3. ✖ $B = |A - C|$

4. ✖ $B = 90°$

Question Number : 17 Question Id : 41809918019 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In ΔABC if $b^2 + c^2 = 2a^2$, then the value of $\dfrac{\cot A}{\cot B + \cot C}$ is

Options :

1. ✔ $\dfrac{1}{2}$

2. ✖ $\dfrac{3}{2}$

3. ✖

$$\frac{5}{2}$$

$$\frac{5}{3}$$

4. ✖

Question Number : 18 Question Id : 41809918020 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Given that $z = (1 + i\sqrt{3})^{100}$, then $\left(\dfrac{Re(z)}{Im(z)}\right) =$

Options :

1. ✖ 2^{100}

2. ✖ 2^{50}

3. ✔ $\dfrac{1}{\sqrt{3}}$

4. ✖ $\sqrt{3}$

Question Number : 19 Question Id : 41809918021 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Sum of the common roots of the equations

$z^3 + 2z^2 + 2z + 1 = 0$ and $z^{1985} + z^{100} + 1 = 0$ is

Options :

1. ✔ -1

2. ✘ 1

3. ✘ 0

4. ✘ 2

Question Number : 20 Question Id : 41809918022 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Equation of the circle which passes through $(1, 0)$ and $(0,1)$ and has its

radius as small as possible is

Options :

1. ✔ $x^2 + y^2 - x - y = 0$

2. ✘ $x^2 + y^2 = 1$

3. ✘ $2x^2 + 2y^2 - 3x - 3y + 1 = 0$

$$x^2 + y^2 - 4x - 4y + 3 = 0$$

4. ✖

Question Number : 21 Question Id : 41809918023 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The focal distance of the point (x, y) on the parabola $x^2 - 8x + 16y = 0$ is

Options :

1. ✖ $|x - 5|$

2. ✖ $|y - 5|$

3. ✖ $|x + 5|$

4. ✔ $|y + 5|$

Question Number : 22 Question Id : 41809918024 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The area of the greatest rectangle that can be inscribed in the ellipse

$$\frac{x^2}{9} + \frac{y^2}{4} = 1 \text{ is}$$

Options :

1. ✔ 12 sq. units

2. ✖ 8 sq. units

3. ✖ 15 sq. units

4. ✖ 4 sq.units

Question Number : 23 Question Id : 41809918025 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The eccentricity of the ellipse $16x^2 + 25y^2 = 400$ is

Options :

1. ✖ 2/3

2. ✔ 3/5

3. ✖ 4/3

4. ✖ 1/5

Question Number : 24 Question Id : 41809918026 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The axes of an ellipse are coordinate axes, distance between directrices is 32.

Then the equation of the ellipse , if the distance between the foci is 8 is

Options :

1. ✖ $\dfrac{x^2}{64}+\dfrac{y^2}{32}=1$

2. ✖ $\dfrac{x^2}{64}+\dfrac{y^2}{16}=1$

3. ✔ $\dfrac{x^2}{64}+\dfrac{y^2}{48}=1$

4. ✖ $\dfrac{x^2}{64}+\dfrac{y^2}{8}=1$

Question Number : 25 Question Id : 41809918027 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The length of the transverse axis of the hyperbola $4x^2-9y^2+8x+40=0$ is

Options :

1. ✖ 8

2. ✖ 6

3. ✔ 4

4. ✖ ^{5}

Question Number : 26 Question Id : 41809918028 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(x) = \dfrac{1}{3}\left(f(x+1) + \dfrac{5}{f(x+2)}\right)$ and $f(x) > 0$ then for all $x \in R$, then

for $\displaystyle \lim_{x \to \infty} f(x) =$

Options :

1. ✖ 0

2. ✖ $\sqrt{\dfrac{2}{5}}$

3. ✔ $\sqrt{\dfrac{5}{2}}$

4. ✖ ∞

Question Number : 27 Question Id : 41809918029 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If α and β are the roots of $ax^2 + bx + c = 0$ then

$$\underset{x \to \alpha}{lt} \ (1 + ax^2 + bx + c)^{1/(x-\alpha)} \quad \text{is}$$

Options :

1. ✖ $a(\alpha - \beta)$

2. ✖ $\ln |a(\alpha - \beta)|$

3. ✔ $e^{a(\alpha - \beta)}$

4. ✖ $e^{|a(\alpha - \beta)|}$

Question Number : 28 Question Id : 41809918030 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The derivative of $\sin^{-1}\left(\dfrac{2x}{1+x^2}\right)$ with respect to $\tan^{-1}\left(\dfrac{2x}{1-x^2}\right)$

Options :

1. ✖ 0

2. ✔ 1

3. ✖ $\dfrac{1}{1-x^2}$

4. ✗ $\dfrac{1}{1+x^2}$

Question Number : 29 Question Id : 41809918031 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $x^y \cdot y^x = 16$ then $\dfrac{dy}{dx}$ at $(2,2)$ is

Options :

1. ✔ -1

2. ✗ 0

3. ✗ 1

4. ✗ -2

Question Number : 30 Question Id : 41809918032 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The area if the triangle formed by positive x – axis , and the normal and

tangent to the circle $x^2 + y^2 = 4$ at $\left(1, \sqrt{3}\right)$ is

Options :

1. ✗

$\sqrt{3}$ sq. units

2. ✔ $2\sqrt{3}$ sq. units

3. ✘ $4\sqrt{3}$ sq. units

4. ✘ $\sqrt{3}/2$ sq. units

Question Number : 31 Question Id : 41809918033 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $y = \log_{\sin x} (\tan x)$ then $\left(\dfrac{dy}{dx}\right)_{\pi/4} =$

Options :

1. ✘ $\dfrac{4}{\log 2}$

2. ✘ $-4 \log 2$

3. ✔ $\dfrac{-4}{\log 2}$

4. ✘ $2 \log 4$

Question Number : 32 Question Id : 41809918034 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If there is an error of 0.05 cm in the side of a cube 10 cm, then the error in its

surface area is

Options :

1. ✔ $6 \ cm^2$

2. ✖ $5 \ cm^2$

3. ✖ $12 \ cm^2$

4. ✖ $3 \ cm^2$

Question Number : 33 Question Id : 41809918035 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The curves $4x^2 + 9y^2 = 72$ and $x^2 - y^2 = 5$ at $(3, 2)$

Options :

1. ✖ Touch each other

2. ✔ Cut orthogonally

3.

✖ Intersect at 45°

4. ✖ Intersect at 60 °

Question Number : 34 Question Id : 41809918036 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $u = x^y$ then $\dfrac{\partial^2 u}{\partial x \partial y} =$

Options :

1. ✔ $x^{y-1}(1 + y \log x)$

2. ✖ $y^{x-1}(1 + y \log x)$

3. ✖ $y^{x-1}(1 - x \log y)$

4. ✖ $x^{y-1}(1 - y \log x)$

Question Number : 35 Question Id : 41809918037 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $u = \tan^{-1}(y/x)$ then $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y} =$

Options :

1. ✔   0

2. ✘ $\sin 2u$

3. ✘ $\cos u$

4. ✘ $2 \tan^{-1} u$

Question Number : 36 Question Id : 41809918038 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$If \int f(x) \cos x \, dx = \frac{1}{2}\left[f(x)\right]^{2} + c \quad then \quad f(x) =$$

Options :

1. ✘ x

2. ✔ $\sin x$

3. ✘ $\cos x$

4. ✘ $\tan x$

Question Number : 37 Question Id : 41809918039 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\int_{0}^{11} [x]^3 \, dx$, where $[\bullet]$ denotes the greatest integer function, is

Options :

1. ✖   0

2. ✖   14400

3. ✖   2200

4. ✔   3025

Question Number : 38 Question Id : 41809918040 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The triangle formed by tangent to the curve $f(x) = x^2 + bx - b$ at the point $(1,1)$ and the coordinate axes lies in the first quadrant. If its area is 2 sq.units then the value of b is

Options :

1. ✔ -3

2. ✖ -2

3.

✖   −1

    0
4. ✖

Question Number : 39 Question Id : 41809918041 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $y = \int \dfrac{dx}{(1+x^2)^{\frac{3}{2}}}$ and $y = 0$ *when* $x = 0$ then the value of y when $x = 1$ is

Options :

1. ✔ $\dfrac{1}{\sqrt{2}}$

2. ✖ $\sqrt{2}$

3. ✖ $2\sqrt{2}$

4. ✖ $3\sqrt{2}$

Question Number : 40 Question Id : 41809918042 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\int \dfrac{dx}{\cos^3 x \sqrt{\sin 2x}} = a(\tan^2 x + b)\sqrt{\tan x} + c$, then

Options :

1. ✖ $a = \dfrac{\sqrt{2}}{5}$, $b = \dfrac{1}{\sqrt{5}}$

2. ✔ $a = \dfrac{\sqrt{2}}{5}$, $b = 5$

3. ✖ $a = \dfrac{\sqrt{2}}{5}$, $b = -\dfrac{1}{\sqrt{5}}$

4. ✖ $a = \dfrac{\sqrt{2}}{5}$, $b = \sqrt{5}$

Question Number : 41 Question Id : 41809918043 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\int_{-1}^{1} \tan^{-1} x \, dx$ is

Options :

1. ✔   0

2. ✖ $\dfrac{\pi}{4}$

3. ✖ $-\dfrac{\pi}{4}$

4. ✖ $\dfrac{\pi}{2}$

Question Number : 42 Question Id : 41809918044 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $S_n = \left[\dfrac{1}{1+\sqrt{n}} + \dfrac{1}{2+\sqrt{2n}} + \dfrac{1}{3+\sqrt{3n}} + ... + \dfrac{1}{n+\sqrt{n^2}} \right]$ then $\displaystyle \lim_{n \to \infty} S_n =$

Options :

1. ✖ $\log 2$

2. ✔ $\log 4$

3. ✖ $\log 6$

4. ✖ $\log 8$

Question Number : 43 Question Id : 41809918045 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The volume of the solid generated by revolving the ellipse $\frac{x^2}{9} + \frac{y^2}{16} = 1$ about the minor axis is_____ cubic units.

Options :

1. ✗ $128\,\pi$

2. ✗ $64\,\pi$

3. ✓ $48\,\pi$

4. ✗ $16\,\pi$

Question Number : 44 Question Id : 41809918046 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The differential equation of all parabolas whose axis are parallel to y-axis is

Options :

1. ✓ $\dfrac{d^3y}{dx^3} = 0$

2. ✗ $\dfrac{d^2y}{dx^2} = C$

3. ✖

$$\frac{d^3y}{dx^3} + \frac{d^2y}{dx^2} = 0$$

4. ✖

$$\frac{d^2y}{dx^2} + 2\frac{dy}{dx} = C$$

Question Number : 45 Question Id : 41809918047 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Integrating factor of the differential equation $\cos x \dfrac{dy}{dx} + y\sin x = 1$ is

Options :

1. ✖ $\cos x$

2. ✖ $\tan x$

3. ✔ $\sec x$

4. ✖ $\sin x$

Question Number : 46 Question Id : 41809918048 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The differential equation associated with the primitive $ax^2 + by^2 = 1$ is

Options :

1. ✖ $x = y\dfrac{dy}{dx}$

2. ✖ $x + y\dfrac{dy}{dx} = 0$

3. ✔ $x\left(\dfrac{dy}{dx}\right)^{2} + xy\dfrac{d^{2}y}{dx^{2}} = y\dfrac{dy}{dx}$

4. ✖ $x = y\dfrac{d^{2}y}{dx^{2}}$

Question Number : 47 Question Id : 41809918049 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The primitive for the differential equation $x\,dy - (y - x)dx = 0$ is

Options :

1. ✖ $\dfrac{x}{y} + \log|x| = C$

2. ✔ $\dfrac{y}{x} + \log|x| = C$

3. ✖ $\dfrac{x}{y}\log|x| = C$

$$x^2 + y^2 = C$$

4. ✗

Question Number : 48 Question Id : 41809918050 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The degree of the differential equation $y = x\dfrac{dy}{dx} + \sqrt{1 + \left(\dfrac{dy}{dx}\right)^2}$

Options :

1. ✗ 1

2. ✔ 2

3. ✗ 4

4. ✗ 3

Question Number : 49 Question Id : 41809918051 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The order of the differential equation corresponding to the primitive

$y = ae^x + be^{2x} + ce^{3x}$ where a, b and c are arbitrary constants

Options :

1. ✗

1   1

2. ✖   2

3. ✔   3

4. ✖   4

Question Number : 50 Question Id : 41809918052 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The complimentary function of the differential equation

$$\frac{d^2y}{dx^2} + 4\frac{dy}{dx} + 4y = 4\cos x \text{ is}$$

Options :

1. ✖ $y = c_1 \cos 2x + c_2 \sin 2x$

2. ✔ $y = (c_1 + c_2 \, x)e^{-2x}$

3. ✖ $y = c_1^2 + 4c_2 + 4c_3$

4. ✖ $y = 4\cos c_1 x$

Physics

Question Number : 51 Question Id : 41809918053 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The dimension of the ratio of angular momentum and linear momentum is

Options :

1. ✖ L^0

2. ✔ L^1

3. ✖ L^2

L^{-1}

4. ✖

Question Number : 52 Question Id : 41809918054 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

One Fermi is equivalent to

Options :

10^{-12} meter

1. ✖

10^{12} meter

2. ✖

10^{-15} meter

3. ✔

10^{15} meter

4. ✖

Question Number : 53 Question Id : 41809918055 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A cat is situated at point A (0,3,4) and a rat is situated at point B (5,3,-8).

The cat is free to move but the rat is always at rest. Find the minimum

distance travelled by cat to catch the rat

Options :

5 units

1. ✖

12 units

2. ✖

13 units

3. ✔

17 units

4. ✖

Question Number : 54 Question Id : 41809918056 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Find the values of x and y for which vectors $\vec{A} = (6\hat{i} + x\hat{j} - 2\hat{k})$ and

$\vec{B} = (5\hat{i} - 6\hat{j} - y\hat{k})$ may be parallel

Options :

$x=0, \ y=\dfrac{2}{3}$

1. ✖

$x=-\dfrac{36}{5}, \ y=\dfrac{5}{3}$

2. ✔

$x=-\dfrac{15}{3}, \ y=\dfrac{23}{5}$

3. ✖

$$x = \frac{36}{5}, y = \frac{15}{4}$$

4. ✖

Question Number : 55 Question Id : 41809918057 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The velocity of a body moving along a straight line with uniform deceleration 'a' reduces by ¾ of its initial velocity. The total time of motion of the body is

Options :

$$\frac{3u}{4a}$$

1. ✔

$$\frac{4a}{3u}$$

2. ✖

3u x 4a

3. ✖

zero

4. ✖

Question Number : 56 Question Id : 41809918058 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A stone thrown vertically upwards with a speed of 'u' m/s attains a height 'h₁'. Another stone thrown vertically upwards from the same point with a speed of $\frac{u}{3}$ m/s attains a height 'h₂'. Choose the correct relation

Options :

1. ✔ $h_2 = \frac{h_1}{9}$

2. ✖ $h_2 = \frac{h_1}{19}$

3. ✖ $h_2 = \frac{h_1}{3}$

4. ✖ $h_2 = 3h_1$

Question Number : 57 Question Id : 41809918059 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The horizontal range of a projectile is $4\sqrt{3}$ times of its maximum height. Its angle of projection will be

Options :

1. ✔ 30^0

2. ✖ 60^0

3. ✖ 90^0

4. ✖ 45^0

Question Number : 58 Question Id : 41809918060 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The range of a projectile fired at an angle of 15° is 30m. If it is fired with

the same speed at an angle of 45°, its range will be

Options :

1. ✖ 50m

2. ✖ 30m

3. ✔ 60m

4. ✖ 100m

Question Number : 59 Question Id : 41809918061 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a body slides down an inclined plane with coefficient of friction as μ,

then its acceleration is given by

Options :

1. ✖ $g(\mu \sin \Theta + \cos \Theta)$

2. ✖ $g(\mu \sin \Theta - \cos \Theta)$

3. ✖ $g(\sin \Theta + \mu \cos \Theta)$

4. ✔ $g(\sin \Theta - \mu \cos \Theta)$

Question Number : 60 Question Id : 41809918062 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A body is in equilibrium on a rough inclined plane under its own weight. If

the angle of inclination of the inclined plane is 'α' and the angle of friction

is 'λ',then

Options :

1. ✖ $\alpha > \lambda$

2. ✘ $\alpha > \lambda/2$

3. ✔ $\alpha = \lambda$

4. ✘ $\alpha \geq \lambda$

Question Number : 61 Question Id : 41809918063 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A ball of mass 1 kg collides with a wall with speed 8 ms^{-1} and rebounds on the same line with the same speed. If mass of the wall is taken as infinite, the work done by the ball on the wall is

Options :

1. ✘ 6 J

2. ✘ 8 J

3. ✘ 9 J

4. ✔ zero

Question Number : 62 Question Id : 41809918064 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A pump motor is used to deliver water at a certain rate from a given pipe.

To obtain thrice as much water from the same pipe in the same time, power

of the motor has to be increased

Options :

1. ✖   3 times

2. ✖   9 times

3. ✔   27 times

4. ✖   81 times

Question Number : 63 Question Id : 41809918065 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The energy required to accelerate a car from rest to $10 \ ms^{-1}$ is E. What

energy will be required to accelerate the car from $10 \ ms^{-1}$ to $20 \ ms^{-1}$?

Options :

1. ✖   E

2. ✔ 3E

3. ✘ 5E

4. ✘ 7E

Question Number : 64 Question Id : 41809918066 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The time period of a simple pendulum of infinite length is (R_e = radius of earth)

Options :

1. ✔ $T = 2\pi \sqrt{\dfrac{R_e}{g}}$

2. ✘ $T = 2\pi \sqrt{\dfrac{2R_e}{g}}$

3. ✘ $T = 2\pi \sqrt{\dfrac{R_e}{2g}}$

4. ✘ $T = \infty$

Question Number : 65 Question Id : 41809918067 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A particle executes SHM of amplitude 5 cm and period 3 s. The velocity of

the particle at a distance 4 cm from the mean position (take $\pi = 3$) is

Options :

1. ✖ $8 \ cm \ s^{-1}$

2. ✖ $12 \ cm \ s^{-1}$

3. ✖ $4 \ cm \ s^{-1}$

4. ✔ $6 \ cm \ s^{-1}$

Question Number : 66 Question Id : 41809918068 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A particle is executing SHM with amplitude α and has maximum velocity

'v'. Its speed at displacement $\alpha/2$ will be

Options :

1. ✔ $0.866 \ v$

2. ✖ v/2

3. ✖ v

4. ✖ v/4

Question Number : 67 Question Id : 41809918069 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A whistle of frequency 1000 Hz is sounded on a car travelling towards a cliff with velocity of 18 m s^{-1} normal to the cliff. If velocity of sound $= 330$ m s^{-1}, then the apparent frequency of the echo as heard by the car driver is nearly

Options :

1. ✔ 1115 Hz

2. ✖ 115 Hz

3. ✖ 67 Hz

4. ✖ 47.2 Hz

Question Number : 68 Question Id : 41809918070 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An open window is a perfect

Options :

Reflector of sound

1. ✖

Absorber of sound

2. ✔

Scatterer

3. ✖

Refractor

4. ✖

Question Number : 69 Question Id : 41809918071 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A gas is found to obey P^2V = constant. The initial temperature and volume are T_0 & V_0. If the gas expands to volume $2V_0$, then the final temperature is

Options :

1. ✔ $\sqrt{2}\, T_0$

2. ✖

    2To

3. ✖

    $\dfrac{T_0}{2}$

4. ✖

    $\dfrac{T_0}{\sqrt{2}}$

Question Number : 70 Question Id : 41809918072 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The constant in ideal gas equation is known as

Options :

1. ✔

Universal gas constant

2. ✖

Pressure constant

3. ✖

Temperature constant

4. ✖

Boltzmann constant

Question Number : 71 Question Id : 41809918073 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio of specific heats for a mono atomic gas is given by

Options :

1. ✖
$$\frac{7}{5}$$

2. ✖
$$\frac{5}{2}$$

3. ✔
$$\frac{5}{3}$$

4. ✖
$$\frac{9}{5}$$

Question Number : 72 Question Id : 41809918074 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two identical samples of a gas are allowed to expand (i) isothermally (ii)

adiabatically. Work done is

Options :

1. ✖
More in the adiabatic process

More in the isothermal process

2. ✔

Equal in both processes

3. ✖

No Work done in any process

4. ✖

Question Number : 73 Question Id : 41809918075 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The heat required to raise 0.5 Kg of sand from 30°C to 90 °C is given by

(Specific Heat of sand = 830 J/Kg °C)

Options :

23450J

1. ✖

54560J

2. ✖

4578J

3. ✖

24900J

4. ✔

Question Number : 74 Question Id : 41809918076 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A ray of light will undergo total internal reflection if it

Options :

1. ✔ Travels from denser medium to rarer medium & angle of incidence should be greater than critical angle

2. ✖ Travels from rarer medium to denser medium & angle of incidence should be greater than critical angle

3. ✖ Travels from denser medium to rarer medium & angle of incidence should be less than critical angle

4. ✖ Travels from rarer medium to denser medium& angle of incidence should be less than critical angle

Question Number : 75 Question Id : 41809918077 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The expulsion of a magnetic field from the interior of a superconductor , a phenomenon is known as

Options :

1. ✖ Isotopic effect

2. ✖ BCS theory

3. ✔ Meissner effect

4. ✖ London theory

Chemistry

Section Id :	418099362
Section Number :	3
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 76 Question Id : 41809918078 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many electrons in an atom may have the quantum numbers, n=4,

m= -½ ?

Options :

1. ✖ 1

2. ✖ 2

3. ✔ 16

4. ✖ 32

Question Number : 77 Question Id : 41809918079 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Balmer series of Hydrogen atom corresponds to which spectral region?

Options :

1. ✖ X-ray region

2. ✖ Ultraviolet region

3. ✖ Infrared region

4. ✔ Visible region

Question Number : 78 Question Id : 41809918080 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The electronic configuration of the Cu atom violates which principle?

Options :

1. ✖ Hund's rule

2. ✖ Pauli Exclusion Principle

3. ✔ Aufbau Principle

4. ✖ Heisenberg's Uncertainty Principle

Question Number : 79 Question Id : 41809918081 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

As compared to covalent compounds, ionic compounds generally have:

Options :

1. ✖ low melting points and low boiling points

2. ✔ high melting points and high boiling points

3. ✖ low melting points and high boiling points

4. ✖ high melting points and low boiling points

Question Number : 80 Question Id : 41809918082 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The octet rule is not valid for the molecule:

Options :

1. ✖ CO_2

2. ✖ H_2O

3. ✖ O_2

4. ✔ CO

Question Number : 81 Question Id : 41809918083 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two solutions of a substance (non-electrolyte) are mixed in the following manner: 480 mL of 1.5 M first solution, 520 mL of 1.2 M second solution.

What is the molarity of the final mixture?

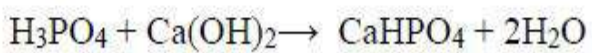**Options :**

1. ✖ 1.20 M

2. ✖ 1.50 M

3. ✖ 2.70 M

4. ✔ 1.344 M

Question Number : 82 Question Id : 41809918084 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The equivalent mass of H_3PO_4 in the following equation (let M be the mass of H_3PO_4):

$$H_3PO_4 + Ca(OH)_2 \rightarrow CaHPO_4 + 2H_2O$$

Options :

1. ✖ M

2. ✔ M/2

3. ✖ M/3

4. ✖ 2M

Question Number : 83 Question Id : 41809918085 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The normality of 4% (mass/volume) NaOH solution is

Options :

1. ✖   0.1 N

2. ✔ 1.0 N

3. ✖   0.5 N

4. ✖   0.01 N

Question Number : 84 Question Id : 41809918086 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
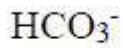
Which of the following cannot function as both Bronsted acid and base?

Options :

1. ✔   HCl

2. ✖ NH_3

3. ✖ HSO_4^-

4. ✗ HCO_3^-

Question Number : 85 Question Id : 41809918087 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following will make a basic buffer?

Options :

1. ✔   100 mL of 0.1 M HCl + 200 mL of 0.1 M NH_4OH

2. ✗   100 mL of 0.1 M HCl + 100 mL of 0.1 M NH_4OH

3. ✗   50 mL of 0.1 M NaOH +25 mL of 0.1 M CH_3COOH

4. ✗   100 mL of 0.1 M CH_3COOH + 100 mL of 0.1 M NaOH

Question Number : 86 Question Id : 41809918088 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hydrogen gas is not liberated when the following metal is added to dil. HCl.

Options :

1. ✔   Mg

2.

Zn

✖

3. ✖ Ag

4. ✖ Cu

Question Number : 87 Question Id : 41809918089 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The reduction potential of hydrogen half-cell will be negative if:

Options :

$p(H_2)$ = 1 atm and $[H^+]$ = 1 M
1. ✖

$p(H_2)$ = 2 atm and $[H^+]$ = 2 M
2. ✖

$p(H_2)$ = 1 atm and $[H^+]$ = 2 M
3. ✖

$p(H_2)$ = 2 atm and $[H^+]$ = 1 M
4. ✔

Question Number : 88 Question Id : 41809918090 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

3 faraday of electricity are passed through molten Al_2O_3, aqueous solution of $CuSO_4$ and molten NaCl taken in three different electrolytic cells. The amount of Al, Cu and Na deposited at the cathodes will be in the ratio of:

Options :

1. ✖   1 mole : 2 mole : 3mole

2. ✖   3 mole : 2 mole : 1 mole

3. ✖   1.5 mole : 2 mole : 3 mole

4. ✔   1 mole : 1.5 mole : 3 mole

Question Number : 89 Question Id : 41809918091 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the EMF of cell represented as $Zn(s) / Zn^{2+}(Aq) \parallel H^{+}(1M)$

$/H_2(1atm)$ if $E^0_{Zn2+/Zn} = -0.7618$ V

Options :

1. ✔   + 0.7618 V

2. ✖   0.0 V

3. ✖   -0.7618 V

4. ✖ +0.540 V

Question Number : 90 Question Id : 41809918092 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In Ion-exchanger, the exhausted cation exchange resin can be regenerated

by washing with:

Options :

1. ✖ dil. NaOH

2. ✔ dil. HCl

3. ✖ Distilled water

4. ✖ Brakish water

Question Number : 91 Question Id : 41809918093 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is powerful disinfectant?

Options :

1. ✖ O_2

2.

   ✔   Cl$_2$

3. ✖   N$_2$

4. ✖   CaOCl$_2$

Question Number : 92 Question Id : 41809918094 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A sample of water contain temporary hardness of 56.8 mg/L. Express the

temporary hardness in terms of e (Clark degrees)

Options :

1. ✖   56.8 e

2. ✔   3.976 e

3. ✖   5.68 e

4. ✖   811.43 e

Question Number : 93 Question Id : 41809918095 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Tinning is done by:

Options :

1. ✖ Electroplating

2. ✖ Spraying

3. ✔ Hot dipping

4. ✖ Cementation

Question Number : 94 Question Id : 41809918096 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the oxygen supply is limited during the rusting of iron, corrosion product is:

Options :

1. ✖ Fe_2O_3

2. ✖ $Fe_2O_3. xH_2O$

3. ✖ $Fe_2O_3. 2H_2O$

4. ✔ Fe_3O_4

Question Number : 95 Question Id : 41809918097 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Buna-N rubber is made from:

Options :

1. ✖   Butadiene and formaldehyde

2. ✖   Isoprene and Phenol

3. ✔   Butadiene and acrylonitrile

4. ✖   Phenol and styrene

Question Number : 96 Question Id : 41809918098 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A good example of condensation polymer is:

Options :

1. ✖   Teflon

2. ✖   Polythene

3. ✔ Bakelite

4. ✘ Polypropylene

Question Number : 97 Question Id : 41809918099 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Vulcanisation of rubber is mainly by the addition of:

Options :

1. ✘ Oxygen gas

2. ✘ Magnesium oxide

3. ✔ Sulphur

4. ✘ Zinc oxide

Question Number : 98 Question Id : 41809918100 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

During the refining of petroleum, which of the following is used to remove

sulphur impurity:

Options :

Copper Oxide

1. ✔

Copper Sulphide

2. ✘

Magnesium chloride

3. ✘

Magnesium sulphate

4. ✘

Question Number : 99 Question Id : 41809918101 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the oxide of nitrogen is not a common pollutant?

Options :

N_2O_5

1. ✔

N_2O

2. ✘

NO

3. ✘

NO_2

4. ✘

Question Number : 100 Question Id : 41809918102 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

DDT is:

Options :

1. ✖ Nitrogen containing insecticide

2. ✖ Biodegradable pollutant

3. ✔ Non-Biodegradable pollutant

4. ✖ An antibiotic

Chemical Engineering

Section Id :	418099363
Section Number :	4
Mandatory or Optional :	Mandatory
Number of Questions :	100
Section Marks :	100
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 101 Question Id : 41809918103 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The average boiling point of aviation turbine fuel is closed to that of _____

Options :

1. ✖ Diesel

2. ✖ LPG

3. ✖ Lubricating oil

4. ✔ Kerosene

Question Number : 102 Question Id : 41809918104 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Commercially ethylene is produced from naphtha by

Options :

1. ✖ Catalytic cracking

2. ✔ Hydro cracking

3. ✖ Pyrolysis

4. ✖ Catalytic dehydrogenation

Question Number : 103 Question Id : 41809918105 Display Question Number : Yes Is Question

In a fluid catalytic cracking unit, the nature of the reactions occurring in the reactor and in regenerator are

Options :

1. ✖ reactor – exothermic, regenerator - exothermic

2. ✖ reactor – exothermic, regenerator - endothermic

3. ✔ reactor – endothermic, regenerator - exothermic

4. ✖ reactor – endothermic, regenerator - endothermic

Question Number : 104 Question Id : 41809918106 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a detergent?

Options :

1. ✖ Cellulose nitrate

2. ✖ Benzene hexachloride

3. ✖ Poly vinyl chloride

4. ✔ Alkyl benzene sulphonate

Question Number : 105 Question Id : 41809918107 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hydro treating is used for

Options :

1. ✖ removal of water from crude oil

2. ✖ treatment of crude oil with water

3. ✖ improving octane number of gasolene

4. ✔ removal of sulphur and nitrogen from petroleum fractions

Question Number : 106 Question Id : 41809918108 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Chloro amines are used in water treatment for

Options :

1. ✔ disinfection and control of taste and odour

2. ✖ corrosion control

3. ✖ removing turbidity

control of bacteria

4. ✖

Question Number : 107 Question Id : 41809918109 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a type of coarse crusher?

Options :

1. ✖   Rod mill

2. ✖   Stamp battery

3. ✔   Jaw crusher

4. ✖   dicer

Question Number : 108 Question Id : 41809918110 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the Newton's law region terminal velocity of particle is proportional to

Options :

1. ✖   Square root of particle diameter

2. ✖   Particle diameter

3. ✔ Square of particle diameter

4. ✘ Cube of particle diameter

Question Number : 109 Question Id : 41809918111 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a circular pipe, when a fluid flow is called turbulent?

Options :

1. ✘ High viscosity of fluid

2. ✔ Reynolds number is greater than 2000

3. ✘ Reynolds number is less than 2000

4. ✘ The density of fluid is low

Question Number : 110 Question Id : 41809918112 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The main size reduction operation in ultrafine grinders is

Options :

1. ✘ cutting

2. ✔ attrition

3. ✖ compression

4. ✖ impact

Question Number : 111 Question Id : 41809918113 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which of the following reaction the rate of reaction is a function of rate constant alone?

Options :

1. ✔ Zero order reaction

2. ✖ Second order reaction

3. ✖ First order reaction

4. ✖ Third order reaction

Question Number : 112 Question Id : 41809918114 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In _____ there are no spatial variations in concentration and temperature.

Options :

1. ✔ PFR

2. ✖ CSTR

3. ✖ Packed bed reactor

4. ✖ Tubular reactor

Question Number : 113 Question Id : 41809918115 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The rate determining step of a series of reactions is the one _____

Options :

1. ✖ that is fastest

2. ✔ that is slowest

3. ✖ that does not contribute to the reaction

4. ✖ that does not occur

Question Number : 114 Question Id : 41809918116 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

The value of expansion factor(ϵ_A) for the following isothermal gas phase reaction, A → 4R is _____

Options :

1. ✖ 1

2. ✖ 2

3. ✔ 3

0

4. ✖

Question Number : 115 Question Id : 41809918117 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The catalyst deactivation caused by deposition on surface and pores of catalyst is called _____

Options :

1. ✖ Adsorption

2. ✖ Regeneration

3. ✔ Fouling

4.

desorption

✖

Question Number : 116 Question Id : 41809918118 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following correctly represents the Damkohler number for a first order reaction?(k is rate constant, τ is space time)

Options :

1. ✖   k

2. ✔ $k\tau$

3. ✖ τ

4. ✖ $1/k\tau$

Question Number : 117 Question Id : 41809918119 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When 4 kg moles of an ideal gas expands in vacuum spontaneously. The work is _____

Options :

1. ✖   4 J

2. ✖ 8J

3. ✔ Zero

4. ✖ Infinite

Question Number : 118 Question Id : 41809918120 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Baffles are provided in heat exchangers to

Options :

1. ✖ Increase pressure drop

2. ✖ Decrease pressure drop

3. ✖ Decrease area

4. ✔ Increase shell side heat transfer coefficient

Question Number : 119 Question Id : 41809918121 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

One ton of refrigeration is defined as the heat rate corresponding to melting

of one ton of ice in one _____

Options :

1. ✖ Hour

2. ✔ Day

3. ✖ Minute

4. ✖ Second

Question Number : 120 Question Id : 41809918122 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Effect of scaling in a heat exchanger is accounted through

Options :

1. ✖ Heat transfer coefficient

2. ✔ Fouling factor

3. ✖ Insulation factor

4. ✖ Diffusivity factor

Question Number : 121 Question Id : 41809918123 Display Question Number : Yes Is Question

If k is thermal conductivity and h is the film coefficient of heat transfer at outer radius of a hollow cylinder, then the critical radius of insulation is equal to _____

Options :

1. ✔ k/h

2. ✘ $2k/h$

3. ✘ $(h/k)^2$

4. ✘ $(2k/h)^{1/2}$

Question Number : 122 Question Id : 41809918124 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A hollow sphere with uniform interior temperature and a small hole behaves as a _____

Options :

1. ✘ Grey body

2. ✘ White body

3. ✔ Black body

4. ✖   Opaque body

Question Number : 123 Question Id : 41809918125 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an azeotropic mixture, the equilibrium vapour composition is

Options :

1. ✖   More than liquid composition

2. ✖   Less than liquid composition

3. ✔   Same as the liquid composition

4. ✖   Independent of pressure

Question Number : 124 Question Id : 41809918126 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In natural convection, the Nusselt number is function of _____

Options :

1. ✖   Reynolds number

2. ✖

Rayleigh number and Reynolds number

3. ✖   Grashoff's number and Rayleigh number

4. ✔   Grashoff's number and Prandtl number

Question Number : 125 Question Id : 41809918127 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Heat of sun reaches to earth by

Options :

1. ✖   Conduction

2. ✖   convection

3. ✔   Radiation

4. ✖   Diffusion

Question Number : 126 Question Id : 41809918128 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The real driving force of mass transfer is _____

Options :

1. ✔ Chemical potential

2. ✘ pressure gradient

3. ✘ Concentration gradient

4. ✘ density difference

Question Number : 127 Question Id : 41809918129 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Units of heat flux is _____

Options :

1. ✘ w/m^2K

2. ✔ w/m^2

3. ✘ $w/m\ K$

4. ✘ $J/kg\ K$

Question Number : 128 Question Id : 41809918130 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The temperature difference at the inlet and exit of heat exchanger is termed as _____

Options :

1. ✘ LMTD

2. ✘ Ranges

3. ✔ Approaches

4. ✘ Gradient

Question Number : 129 Question Id : 41809918131 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is used in staged columns?

Options :

1. ✘ Pall rings

2. ✔ Bubble caps

3. ✘ Rashig rings

4. ✘ Intolox saddles

Question Number : 130 Question Id : 41809918132 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Oils and fats are converted to soap in a process called _____

Options :

1. ✖ Hydrogenation

2. ✖ Esterification

3. ✔ Saponification

4. ✖ Hydration

Question Number : 131 Question Id : 41809918133 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The most widely used coagulant for removing suspended impurities from water is

Options :

1. ✖ Bleaching powder

2. ✖ Chlorine

3.

✔ Alum

Calcium sulphate

4. ✖

Question Number : 132 Question Id : 41809918134 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Catalyst used in steam reforming of naphtha is _____

Options :

1. ✔ Nickel

2. ✖ Platinum

3. ✖ Silica gel

4. ✖ rhodium

Question Number : 133 Question Id : 41809918135 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The operation of a Rotameter is based on

Options :

1. ✔ Variable flow area

2. ✖ Rotation of a turbine

3. ✖ Pressure drop across a nozzle

4. ✖ Pressure at a stagnation point

Question Number : 134 Question Id : 41809918136 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Flooding in a distillation column results due to:

Options :

1. ✖ Low pressure drop

2. ✔ High pressure drop

3. ✖ Low velocity of liquid

4. ✖ High temperature

Question Number : 135 Question Id : 41809918137 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a heat exchanger, floating head is provided to

Options :

1. ✖ Facilitate cleaning of the exchanger

2. ✖ Increase heat transfer area

3. ✖ Increase LMTD

4. ✔ Relieve stress caused by thermal expansion

Question Number : 136 Question Id : 41809918138 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The system exhibiting unbounded response for all bounded inputs is said to be _____ system

Options :

1. ✖ stable

2. ✔ Unstable

3. ✖ Undamped

4. ✖ oscillatory

Question Number : 137 Question Id : 41809918139 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Caustic soda can be stored in _____ drums

Options :

1. ✔ Steel

2. ✖ Cast iron

3. ✖ Brass

4. ✖ Gun metal

Question Number : 138 Question Id : 41809918140 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Brass is an alloy of

Options :

1. ✖ Nickel and tin

2. ✔ Copper and zinc

3. ✖ Tin and lead

4. ✖

Copper, nickel and zinc

Question Number : 139 Question Id : 41809918141 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Bleaching of paper pulp is done by_____

Options :

1. ✖ Bromine

2. ✖ Activated clay

3. ✖ Magnesium sulfate

4. ✔ Chlorine

Question Number : 140 Question Id : 41809918142 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Glass is corroded by _____

Options :

1. ✔ Fluorine

2. ✖ Sulphuric acid

3. ✖ Phosphoric acid

NaOH
4. ✖

Question Number : 141 Question Id : 41809918143 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ are used as corrosion inhibitor for iron and steel in aqueous solution

Options :

1. ✖ Phosphates

2. ✔ chromates

3. ✖ Sulphates

4. ✖ bicarbonates

Question Number : 142 Question Id : 41809918144 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Linz-Donawitz (LD) converter is used in the production of _____

Options :

1. ✔ Steel

2. ✖   Copper

3. ✖   Zinc

4. ✖   Pig iron

Question Number : 143 Question Id : 41809918145 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Common salt is generally not produced usually by _____ method from brine

Options :

1. ✔   Freeze drying

2. ✖   Electrolytic

3. ✖   Solar evaporation

4. ✖   Vacuum evaporation

Question Number : 144 Question Id : 41809918146 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Styrene is produced from ethyl benzene by the process of

Options :

1. ✔ Dehydrogenation

2. ✖ Oxidation

3. ✖ Alkylation

4. ✖ Dehydration

Question Number : 145 Question Id : 41809918147 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Poly-vinyl chloride is _____ material

Options :

1. ✖ Thermosetting

2. ✔ Thermoplastic

3. ✖ A fibrous

4. ✖ Chemically active

Question Number : 146 Question Id : 41809918148 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Pure rectified spirit contains about _____ alcohol

Options :

1. ✖   45 %

2. ✖   70 %

3. ✔   95 %

4. ✖   99.5%

Question Number : 147 Question Id : 41809918149 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Super phosphate is made by reacting phosphate rock with

Options :

1. ✖   Phosphoric acid

2. ✖   Nitric acid

3. ✔   Sulphuric acid

Hydrochloric acid

4. ✖

Question Number : 148 Question Id : 41809918150 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an integrated steel plant, ammonia present in coke ovens gas is normally recovered as _____

Options :

1. ✔ $(NH_4)_2SO_4$

2. ✖ NH_4Cl

3. ✖ $(NH_4)_2\ NO_3$

4. ✖ Liquid ammonia

Question Number : 149 Question Id : 41809918151 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Temporary hardness of water can be removed by

Options :

1. ✔ Boiling

2. ✖ Addition of alum

3. ✖ Addition of lime

4. ✖ Sand filter

Question Number : 150 Question Id : 41809918152 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For steady flow and constant value of thermal conductivity, the temperature distribution for the plane wall is _____

Options :

1. ✖ Parabolic

2. ✔ linear

3. ✖ Logarithmic

4. ✖ Diffusivity cubic factor

Question Number : 151 Question Id : 41809918153 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The catalyst used in the production of elemental sulphur from H_2S (by oxidation – reduction) is _____

Options :

1. ✔   Alumina

2. ✖   Silica gel

3. ✖   Platinum

4. ✖   Nickel

Question Number : 152 Question Id : 41809918154 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Haemoglobin is a _____

Options :

1. ✖   Amino acid

2. ✖   Biological catalyst

3. ✖   Enzyme

4. ✔   protein

Question Number : 153 Question Id : 41809918155 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Concentration of hydrogen peroxide is done by _____

Options :

1. ✖ Crystallization

2. ✔ Vacuum crystallization

3. ✖ Atmospheric distillation

4. ✖ Dehydration

Question Number : 154 Question Id : 41809918156 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Blue colour is imparted to glass by addition of _____

Options :

1. ✖ Ferrous Sulphate

2. ✔ Cobalt Oxide

3. ✖ Lead Oxide

4. ✖ Sodium Hydroxide

Question Number : 155 Question Id : 41809918157 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ability of a material to exist in more than one crystal structure is known as:

Options :

1. ✖ Allotropy

2. ✖ Lattice

3. ✖ Polyhedral phase

4. ✔ Polymorphism

Question Number : 156 Question Id : 41809918158 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Octane number of gasoline is a measure of its

Options :

1. ✖ Smoke point

2. ✖ Ignition delay

3. ✖   Ignition temperature

4. ✔   Knocking tendency

Question Number : 157 Question Id : 41809918159 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Cracking of hydrocarbons is _____

Options :

1. ✖   An exothermic reaction

2. ✔   An endothermic reaction

3. ✖   Favoured at very low temperature

4. ✖   Not a reaction

Question Number : 158 Question Id : 41809918160 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Phenols are added in gasoline to _____

Options :

1. ✖ Improve the octane number

2. ✖ Reduce its viscosity

3. ✔ Act as an antioxidant

4. ✖ Increase its pour point

Question Number : 159 Question Id : 41809918161 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For beneficiation of iron ore, the most commonly used method is

Options :

1. ✖ Flocculation

2. ✔ Froth floatation

3. ✖ Jigging and tabling

4. ✖ Screening

Question Number : 160 Question Id : 41809918162 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following screen has the maximum capacity?

Options :

1. ✖ Grizzlies

2. ✖ Trammels

3. ✖ Shaking screen

4. ✔ Vibrating screen

Question Number : 161 Question Id : 41809918163 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Apron conveyors are used for _____

Options :

1. ✔ Heavy loads and short runs

2. ✖ Small loads and long runs

3. ✖ Heavy loads and long runs

4. ✖ Long runs

Question Number : 162 Question Id : 41809918164 Display Question Number : Yes Is Question

The specific surface of spherical particles is proportional to _____ (where D_p is diameter of particle)

Options :

1. ✔ $D_p{}^2$

2. ✗ D_p

3. ✗ $1/D_p$

4. ✗ $D_p{}^3$

Question Number : 163 Question Id : 41809918165 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For the same flow rate of a fluid, the pressure drop is least for _____

Options :

1. ✗ Flow – nozzle

2. ✗ Orifice meter

3. ✔ Venturi meter

4. ✗ Pitot tube

Question Number : 164 Question Id : 41809918166 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The nominal size of a hose pipe is specified by its

Options :

1. ✖ Outer diameter

2. ✔ Inner diameter

3. ✖ Thickness

4. ✖ Length

Question Number : 165 Question Id : 41809918167 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Dimensions of kinematic viscosity is _____ (M-Mass, L-Length and T-Time)

Options :

1. ✖ MLT^{-1}

2. ✔ L^2T^{-1}

3. ✖ L^2T

4. ✖ L^2T^{-2}

Question Number : 166 Question Id : 41809918168 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Plunger pumps are used for

Options :

1. ✔ Higher pressures

2. ✖ Slurries

3. ✖ Viscous mass

4. ✖ Pastes

Question Number : 167 Question Id : 41809918169 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Baffles in mixing tanks are provided to _____

Options :

1. ✖ Increase pressure drop

2. ✗ Aid in rotational flow

3. ✓ Reduce swirling and vortex formation

4. ✗ Increase the structural strength of the tank

Question Number : 168 Question Id : 41809918170 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Vena-contracta formed during flow of a liquid through an orifice meter is

Options :

1. ✗ Maximum liquid cross section

2. ✗ Minimum velocity of fluid stream

3. ✗ More diameter compared to orifice meter

4. ✓ Minimum fluid cross section

Question Number : 169 Question Id : 41809918171 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The schedule number of a pipe is an indication of its _____

Options :

1. ✖   Diameter

2. ✖   Roughness

3. ✖   Density

4. ✔   Wall thickness

Question Number : 170 Question Id : 41809918172 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Each term in Bernoulli's equation represents _____ of fluid

Options :

1. ✖   Energy per unit area

2. ✔   Energy per unit mass

3. ✖   Force per unit mass

4. ✖   Force per unit area

Question Number : 171 Question Id : 41809918173 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a distillation operation total reflux requires

Options :

1. ✔ Minimum number of stages

2. ✖ Infinite number of stages

3. ✖ Minimum reboiler load

4. ✖ Minimum condenser load

Question Number : 172 Question Id : 41809918174 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The steady state temperature reached by a small amount of liquid evaporating into a large amount of unsaturated vapour gas mixture is called _____

Options :

1. ✖ Dry bulb temperature

2. ✔ Wet bulb temperature

3. ✖ Due point temperature

Bubble point temperature

4. ✖

Question Number : 173 Question Id : 41809918175 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A cold fluid is heated from 100 ^{0}C to 150 ^{0}C by steam at 200 ^{0}C. The LMTD in counter flow is _____

Options :

1. ✖ Less than the LMTD in parallel flow

2. ✖ Greater than the LMTD in parallel flow

3. ✔ Equal to the LMTD in parallel flow

4. ✖ Zero

Question Number : 174 Question Id : 41809918176 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Dryer widely used in a textile industry is _____

Options :

1. ✖ Tray dryer

2. ✖ Rotary dryer

3. ✖   Shelf dryer

     Festoon dryer

4. ✔

Question Number : 175 Question Id : 41809918177 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Presence of sulphur in gasoline

Options :

1. ✔   Leads to corrosion

2. ✖   Decreases gum formation

3. ✖   Increases stabilization

4. ✖   Increases lead susceptibility

Question Number : 176 Question Id : 41809918178 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In petroleum refining catalytic reforming is used to convert

Options :

1. ✖   Paraffin to hydrogen and carbon monoxide

2. ✔ Paraffins and naphthalene to aromatics

3. ✘ Gas oil to diesel and gasoline

4. ✘ Light olefins to gasoline

Question Number : 177 Question Id : 41809918179 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How do detergents help remove dirt and stains from fabrics?

Options :

1. ✘ By dissolving the dirt and stains

2. ✔ By emulsifying the dirt and stains

3. ✘ By absorbing the dirt and stains

4. ✘ By breaking down the dirt and stains into smaller particles

Question Number : 178 Question Id : 41809918180 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

With evaporation, the boiling point of a solution

Options :

1. ✖ Decreases

2. ✔ Increases

3. ✖ Half

4. ✖ Remaining the same

Question Number : 179 Question Id : 41809918181 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The order of the system $(2s + 1)/(4s+1)$ is

Options :

1. ✖ Zero order

2. ✔ First order

3. ✖ Second order

4. ✖ No order

Question Number : 180 Question Id : 41809918182 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Critically damped system means, damping coefficient is _____

Options :

1. ✖ Greater than one

2. ✖ Less than one

3. ✔ Equal to one

4. ✖ Equal to Zero

Question Number : 181 Question Id : 41809918183 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

According to Arrhenius theory, the temperature dependency of rate constant for an elementary reaction is

Options :

1. ✖ $K \alpha\ T^{1/2}$

2. ✔ $K \alpha\ e^{-E/RT}$

3. ✖ $K \alpha\ Te^{-E/RT}$

4. ✖ $K \alpha\ T^{1/2}e^{-E/RT}$

Question Number : 182 Question Id : 41809918184 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The concentration of A in a first order reaction A → B decreases

Options :

1. ✖ Linearly with time

2. ✔ Exponentially with time

3. ✖ Logarithmically with time

4. ✖ With zig- zag pattern

Question Number : 183 Question Id : 41809918185 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The reaction in which one of the products of reaction acts as a catalyst is called _____ reaction

Options :

1. ✖ Biochemical

2. ✖ Photochemical

3. ✖ Catalytic

4. ✔ Autocatalytic

Question Number : 184 Question Id : 41809918186 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The catalyst in a first order reaction changes the

Options :

1. ✖ Heat of reaction

2. ✖ Equilibrium constant

3. ✖ Heat of formation of products

4. ✔ Activation energy

Question Number : 185 Question Id : 41809918187 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Degrees of freedom of water at triple point is _____

Options :

1. ✔ 0

2. ✖ 1

3. ✖ 2

4. ✖ 3

Question Number : 186 Question Id : 41809918188 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The average molecular weight of a flue gas having CO_2 -13.1%, O_2 - 7.7% and N_2 - 79.2% (composition by volume) is

Options :

1. ✔ 30.4

2. ✖ 20.8

3. ✖ 80.8

4. ✖ 120.4

Question Number : 187 Question Id : 41809918189 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The point at which both liquid and gas phases are identical is called

Options :

1. ✔ Critical point

2. ✖ Triple point

3. ✖ Freezing point

4. ✖ Boiling point

Question Number : 188 Question Id : 41809918190 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Thermistors are made of _____

Options :

1. ✖ Ultra-pure metals

2. ✖ Iron-copper alloys

3. ✔ Metal oxides

4. ✖ Nickel-chromium alloys

Question Number : 189 Question Id : 41809918191 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A gas can be liquefied

Options :

1. ✘ Above its critical temperature

2. ✘ At its critical temperature

3. ✔ Below its critical temperature

4. ✘ At freeze temperature

Question Number : 190 Question Id : 41809918192 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

50 ml of liquid A and 100 ml of liquid B are mixed to form a solution of volume 150 ml, then the resulting solution is _____

Options :

1. ✔ Ideal

2. ✘ Non-ideal with positive deviation

3. ✘ Non-ideal with negative deviation

4. ✖ Only Non-ideal

Question Number : 191 Question Id : 41809918193 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solubility of a gas in a liquid is directly proportional to the pressure of the gas. It is known as _____

Options :

1. ✖ Raoult's law

2. ✔ Henry's law

3. ✖ Vant Hoff's law

4. ✖ Arrhenius law

Question Number : 192 Question Id : 41809918194 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Saturated solution of NaCl on heating _____

Options :

1. ✖ becomes Supersaturated

2. ✔ becomes Unsaturated

3. ✖ remains saturated

4. ✖ becomes ideal

Question Number : 193 Question Id : 41809918195 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Reynolds number is defined as the

Options :

1. ✖ Ratio of inertia force to gravity force

2. ✖ Ratio of viscous force to gravity force

3. ✖ Ratio of inertia force to elastic force

4. ✔ Ratio of inertia force to viscous force

Question Number : 194 Question Id : 41809918196 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Screen efficiency is

Options :

1. ✖ Recovery

2. ✖ Rejection

3. ✔ Recovery/rejection

4. ✖ Recovery x rejection

Question Number : 195 Question Id : 41809918197 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The absorption factor is defined as _____ (m=slope of equilibrium line,

L/G = slope of operating line)

Options :

1. ✔ L/mG

2. ✖ G/mL

3. ✖ mL/G

4. ✖ LG/m

Question Number : 196 Question Id : 41809918198 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio of mass flux for diffusion of A through non diffusing B to the mass flux for equimolar counter diffusion is _____

Options :

1. ✔ Greater than one

2. ✖ Less than one

3. ✖ Equal to one

4. ✖ Zero

Question Number : 197 Question Id : 41809918199 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A good solvent for gas absorption should have

Options :

1. ✖ High vapour and low viscosity

2. ✖ High vapour pressure and low viscosity

3. ✔ Low vapour pressure and low viscosity

4. ✖ Low vapour pressure and high viscosity

Question Number : 198 Question Id : 41809918200 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio of the thermal boundary layer thickness to the concentration boundary layer thickness is

Options :

1. ✖   Nusselt number

2. ✔   Lewis number

3. ✖   Sherwood number

4. ✖   Prandtl number

Question Number : 199 Question Id : 41809918201 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Minimum reflux ratio in a distillation column results in

Options :

1. ✖   Optimum number of trays

2. ✖   Minimum reboiler size

3. ✔   Maximum condenser load

Minimum number of trays

4. ✖

Question Number : 200 Question Id : 41809918202 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a binary mixture containing components A and B, the relative volatility of A with respect to B is 2.5 when mole fractions are used. The molecular weights of A and B are $M_A = 78$, $M_B=92$. If the compositions are, however, expressed in mass fractions, then the relative volatility is _____

Options :

1. ✖ 1.18

2. ✖ 2.12

3. ✔ 2.5

4. ✖ 295